West Coast Regional Carbon Sequestration Partnership: Phase II Terrestrial Pilots and Regional Characterization

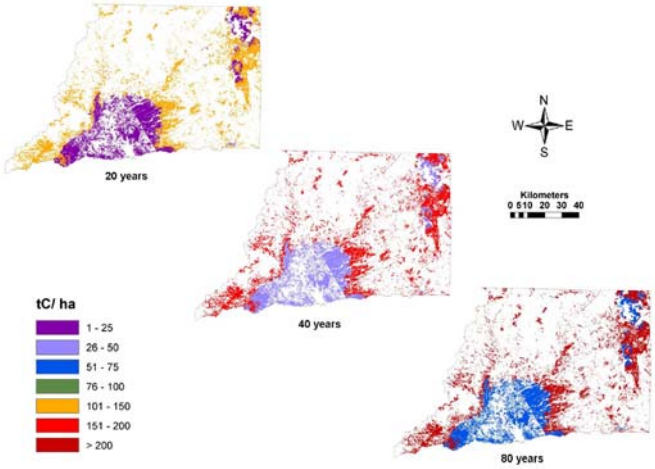
Contract no.	Contractor	Amount* ($)	Match Funding ($)	Commission Project Manager	Commission Contract Manager
500-02-004 (MR-045)[1]	California Institute for Energy and Environment (CIEE)	4,880,835	4,435,000	Larry Myer	Beth Chambers
500-99-013 (BOA-117)[2]	California Institute for Energy and Environment	333,742	—	Guido Franco	Beth Chambers
500-05-029[3]	California Department of Forestry and Fire Protection	200,000	160,000	—	Larry Myer
	Total Amount	**5,414,577**	**4,595,000**		

*CIEE amounts are part of larger WESTCARB Phase II agreements: MR-045 total = $10,071,422; BOA-117 total = $518,925

Contractor Project Managers: [1,2]Carl Blumstein, [3]Doug Wickizer
Project Term: 2006–2009

The Issue

Reducing human-made carbon dioxide (CO_2) emissions is a complex challenge requiring multiple solutions; one near-term solution is terrestrial carbon sequestration. Terrestrial carbon sequestration involves changing the management of forests, rangelands, agricultural lands, and wetlands to either remove more CO_2 from the air or reduce CO_2 emissions from these ecosystems. Some of the attractions of terrestrial sequestration are its lower initial cost (relative to other CO_2 storage options) and the potential for significant environmental, economic, and aesthetic co-benefits. These co-benefits may include improved forest health, creation of new wildlife habitat, prevention of soil erosion and stream sedimentation, improvement of local and regional economies, reclamation of poorly managed soils, and increased recreational value of lands.



Carbon sequestration potential on rangelands in Shasta County, California, suitable for afforestation activities for 20, 40, and 80 years. (tC/ha = tons carbon per hectare.)

Led and co-funded by the California Energy Commission, The West Coast Regional Carbon Sequestration Partnership (WESTCARB) is one of seven partnerships that have been established by the U.S. Department of Energy (DOE) evaluate carbon sequestration technologies best suited for different regions of the country. WESTCARB's region includes California, Alaska, Arizona, British Columbia, Nevada, Oregon, and Washington. As part of WESTCARB's Phase I terrestrial sequestration research, investigators developed carbon baselines and carbon-supply curves and identified potential terrestrial sequestration demonstration sites in the region. The next step in validating terrestrial sequestration feasibility is to perform pilot-scale projects to demonstrate their carbon sequestration effectiveness and to provide experience in measuring carbon benefits.

Project Description

WESTCARB's Phase II research builds on the regional characterization work begun in Phase I (2004–2005) and uses that research to perform pilot validation projects in the region. WESTCARB will perform terrestrial carbon sequestration pilots in Shasta County, California, and Lake County, Oregon, though future sequestration opportunities will also be identified in Washington and Arizona. Further, WESTCARB researchers will evaluate the sequestration potential of planting fast-growing "plantation" tree species in Oregon.

Pilot activities include afforestation of rangelands, improved management of forest fuels to reduce emissions from wildfires and biomass energy, and conservation-based forest management:

- ***Afforestation.*** WESTCARB partners will initiate pilot afforestation activities in 2007 and 2008 using native species on rangelands in Shasta County. The objective of the pilot activities is to understand afforestation techniques, sequestration potential, economics, and reporting.

- ***Improved fuels management/biomass energy.*** WESTCARB partners will develop new methodologies to quantify greenhouse gas emissions from wildfires and carbon credits attributable to improved fuels management. Pilot projects in Shasta and Lake Counties will remove hazardous fuels from high fire-risk forestlands and transport them to biomass energy facilities, collecting data on costs and on changes in carbon stocks.

- ***Conservation-based forest management.*** WESTCARB partners will alter forest management practices to increase overall carbon stocks on timberlands, including harvesting at lower intensities than mandated by applicable regulations, maintaining riparian buffers, managing riparian zones to favor large trees and dense canopies, and increasing stocking. Researchers will evaluate sequestration potential, project economics, practicality, and effectiveness of existing reporting protocols.

WESTCARB findings are reported via widely used geographic information system data formats (www.westcarb.org/carbonatlas.htm). The U.S. Department of Energy has combined WESTCARB results with those from other regional partnerships to create NatCarb, a national carbon atlas (www.natcarb.org/ims.html). WESTCARB research results have also been

published in DOE's *Carbon Sequestration Atlas of the United States and Canada*, available online at http://www.netl.doe.gov/publications/carbon_seq/refshelf.html.

For more information on WESTCARB projects, visit www.westcarb.org.

PIER Program Objectives and Anticipated Benefits for California

This work supports California's goal to support the most cost-effective and environmentally sound strategies, including consideration of global climate change, as recommended in the Integrated Energy Policy Report (IEPR) 2005, by:

- Taking a leadership role in developing technologies that capture and store CO_2.
- Continuing research performed by the California Climate Change Center in evaluating the economic and ecological consequences of climate change and adaptation and mitigation strategies to preserve and improve quality of life.
- Implementing all strategies identified by the Climate Action Team as needed to meet the governor's greenhouse gas emission reduction goals, including recommendations developed as part of the 2005 IEPR.
- Participating in public outreach efforts to educate the public and businesses in California on climate change impacts and actions to mitigate emissions and encourage stakeholder participation in the development of programs to meet California's climate change goals.

This project also addresses California Assembly Bill 32 (Nuñez and Pavley), Chapter 488, Statutes of 2006.

Final Report

PIER-EA staff intend to post the final reports on the Energy Commission website in summer 2010 and will list the website link here.

Contact

Dr. Larry Myer • 916-551-1873 • LMyer@energy.state.ca.us